

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Petition for Rulemaking to Amend the)	RM-11527
Land Mobile-TV Sharing Rules in the)	
470-512 MHz Band		

Comments of RadioSoft

I. INTRODUCTION

1. In its Petition, NPSTC proposes to extend the Washington, DC area to include Baltimore, MD by adding a new point-and-radius in that city. We here propose to add a second such point-and-radius to Hartford, CT, which would address critical spectrum shortages in central Connecticut, Long Island and portions of western Massachusetts.

2. NPSTC also seeks to amend the protections to TV facilities and allocation schemes. We offer comments, corrections and ask for better protections for Domestic Public Land Mobile Radio System (“DPLMRS”) facilities by modifying §74.709.

3. RadioSoft is a software provider to both the Broadcast and Land Mobile industries, and has a well established record in both. We also have considerable experience through affiliated companies with frequency coordination in both Public Safety and Business pools. Our VP, the undersigned, is a member of AFCCE.

II. SUMMARY

4. In examining the need for Public Safety spectrum in Connecticut, we find that UHF TV channels 14 and 15 are unused and largely precluded from use by existing limitations. These comments therefore ask that they be assigned, and sets forth methods for such assignments and protections between land mobile and television uses. The grant of this request would make so-called “T-Band” sharing available throughout the northeastern corridor and is unquestionably in the public interest.

5. Currently, all Full Power and Low power NTSC TV facilities on channels 14 through 16 in Connecticut are precluded by the UHF “taboos” arising from (among others) a hypothetical allocation record in the CDBS. We ask that these preclusions remain at least until this Rulemaking is finalized, i.e., that no new LPTV or Class A TV licenses or modifications involving these channels are permitted in the CT-MA-Long Island area.

6. We find that the required protection to DPLMRS services from 8-VSB Digital Low Power Television (“DLPTV”) facilities in §74.709 is insufficient, and that the NPSTC Petition does not address the exacerbation of this problem in its request to extend the T-Band radii from 80 to 128 kilometers. We propose more appropriate standards for allocation and protection in the extended area.

7. An example of a post-transition DLPTV facility is hypothesized to enable a comparison of the public benefit of possible DPLMRS uses, employing the proposed interference methodology.

8. Suggested language to modify the Rulemaking is proposed in Appendix A.

III. PRECLUSION ANALYSIS

9. From §73.623, new full power DTV facilities may not approach the center of a land mobile assignment by more than 250 km. co-channel and 176 km. if adjacent channel. Since the New York City and Boston DPLMRS assignments on TV channel 14 and 16 are separated by only 303 km., they entirely preclude new full power DTV service anywhere within Connecticut, Massachusetts or Rhode Island. Since TV channel 15 is used only in NY/NJ and not in Boston, its allocation considerations are somewhat different, and are examined separately. Preclusion of both full power and LPTV/Class A/Translator facilities are examined. The assignment of TV Channel 15 is not analyzed for its impact to possible TV-14 assignments, as the co-channel analysis is more preclusive.

10. Assignment of TV Channel 14 to Hartford, CT: N 41° 45' 49", W 72° 41' 08"

Newly Precluded Area for DTV 14, Figure 1

Preclusion study of full power DTV on Channel 14, No Assignments Precluded, Figure 2

Newly Precluded Area for DTV 15, Figure 3

Preclusion study of full power DTV on Channel 15, No Assignments Precluded, Figure 4

11. Assignment of TV Channel 15 to Hartford, CT: N 41° 45' 49", W 72° 41' 08"

Newly Precluded Area, Figure 5

Study of full power DTV on Channel 15, with WNYA-CA interference, Figure 6

IV. ALLOCATION DISCUSSION

12. In §90.311, the Commission lists the TV channels eligible for Land Mobile sharing, according to assignment policies in §90.307 and §90.309. These policies however apply only to new DPLMRS assignments, protect only existing NTSC full power TV facilities, and will thus be outdated as of June 12, 2009. Conversely, in §74.709, a new LPTV, DLPTV or Class A (by reference in §73.6020) facility must protect T-Band DPLMRS stations within a 130 kilometer radius against locating within that radius or overlapping it with its 52 dBμ F(50,10) contour (76 dBμ if adjacent). Note that though the interference potential to land mobile facilities from NTSC stations is quite different from digital TV stations, the same criteria apply. In §74.703(e), it is stated:

(e) Low power TV and TV translator stations are being authorized on a secondary basis to existing land mobile uses and must correct whatever interference they cause to land mobile stations or cease operation.

This applies only to *existing* land mobile stations, and therefore not to those which these comments seek to enable. Note further that although this 52 dBμV/m F(50,10) contour uses §73.699 methodology which assumes receiver height AGL of 9.1 meters, the protected land mobile receivers are normally calculated at 2 meters AGL. We therefore seek to change allocation policies in both directions.

13.

A. Interference to DTV Stations from DPLMRS Systems

14. The NPSTC Petition reads on Page 5:

“(a) D/U ratios. Licensees of public safety station must choose site locations that are a sufficient distance from co-channel and adjacent channel TV and DTV stations, and/or must use reduced transmitting power or transmitting antenna heights such that the following minimum desired signal to undesired signal ratios (D/U ratios) are met:

- (1) The minimum D/U ratio for co-channel stations is 40 dB at the hypothetical Grade B contour (64 dBmV/M) (88.5 kilometers or 55.0 miles) of the TV station or 17 dB at the equivalent Grade B contour (41 dBmV/m) (88.5 kilometers or 55.0 miles) of the DTV station.
- (2) The minimum D/U ratio for adjacent channel stations is 0 dB at the hypothetical Grade B contour (64 dBmV/M) (88.5 kilometers or 55.0 miles) of the TV station or minus 23 dB at the equivalent Grade B contour (41 dBmV/m) (88.5 kilometers or 55.0 miles) of the DTV station.”

The tables and radii should be retired. As almost all facilities for which these tables were designed (i.e., full power NTSC) will sunset next month, historical precedent is mooted. Why define the contour value if it is to be made a simple radius of 88.5 kilometers? That these radii were the basis for the tables in §90.309 is obscured. Since all proposals for new or modified T-Band service come through coordinators, and since all coordinators have access to software such as ours which instantly calculates contours, any presumption of simplicity or lessening of the public burden by reference to tables is obsolete—in fact, the reverse is true. Even among the consulting community, incorrect table values have been submitted to the detriment of all. We propose that the radii be removed, and that contours as defined in §§73.683 – 684 be used. All references to the §90.309 tables, with the “DISTANCE FACTOR” added to protect high-HAAT TV facilities, are cumbersome, unnecessary and are spectrum-restrictive. The proposed amended definitions are given in units of dBμV/m, as was no doubt the original intention.

In footnote 3 on Page 4, the Petition reads:

“...All interference contours are F(50,10).”

§90.545 does not specify that, and it is unclear that an F(50,10) contour is necessary to protect an 8-VSB modulated TV facility.¹ We find that F(50,50) contours will adequately protect TV receivers if the 40 dB NTSC co-channel ratio is to be retained, i.e. using the Land Mobile F(50,50) 24 dBμV/m for any remaining full power NTSC and 34 dBμV/m for LPTV/Class A facilities. For adjacent channel protections, use the F(50,50) 64 dBμV/m for full power and 74 dBμV/m for LPTV/Class A. In the cases of DTV and LPDTV facilities, they should use the same contours. However, as has been past practice, the DPLMRS facilities, when considered as interferers to DTV, should be treated as TV facilities insofar as the presumed receiver height, i.e., the 9 dB correction factor normally employed for land mobile contours should not be used, and the Rule should so specify.

¹ The charts underlying §73.699 for F(50,10) revert to F(50,50) at distances less than 15 kilometers in any case, so for higher DPLMRS contour values such as those proposed for adjacent channel use, the distinction is largely irrelevant.

B. Interference to DPLMRS Systems from DTV Stations

15. Unlike NTSC television transmissions, the 8-VSB modulation scheme used for DTV may be considered to be uniformly distributed in the 6 MHz channel, since its symbols are deliberately randomized. Thus the average density of modulation is far higher except when comparing NTSC synch levels. For a given Effective Radiated Power, there are higher levels of interference to Land Mobile systems from DTV than NTSC. Land Mobile systems prior to 2001 were protected only by an Allocation in the CDBS TV database, which prevented nearby full facility NTSC TV transmitter locations, both co- and adjacent channel. With the advent of Low Power TV and its commonly employed allocation practices contained in OET-69, protection of Land Mobile systems has been eroded, as OET-69 was never designed to protect Land Mobile systems—indeed, adjacent channel DTV operation was specifically designed to be possible and is in use in many places. Thus it is clear that due to both the increased interference potential of 8-VSB and its deliberate authorization policy adjacent to an NTSC Full Power TV, the “protection-by-NTSC-Allocation” method is inappropriate and inadequate to protect DPLMRS facilities. We find however that the 52 dB μ V/m F(50,10) contour called for in §74.509 does not meet the protection requirement either. This is exacerbated by lack of consideration of the two-way nature of DPLMRS systems.

16. To compare existing (rather than the Petition-requested) Land Mobile allocation practices (as if a TV station were a Land Mobile station), protected mobiles are normally prevented in the UHF DPLMRS service from receiving undesired fields from fixed bases greater than 21 dB μ , with an F(50,10) time constant, and mobile receivers assumed at 2 meters AGL. Starting with our hypothetical NTSC LPTV, we find that at the protected Land Mobile contour (130 km. radius), it is allowed 52 dB μ , also at 10%, but at 9.1 meters AGL. Mobiles within that contour may be presumed to range 48 kilometers, or as far as 128 km. from the center coordinates, quite close to the protected 130 kilometer contour at which 52 dB μ V/m unwanted TV signals may be assigned. The affected mobiles are presumed to operate at only 2 m AGL, which by convention is a difference of 9 dB. Adding two kilometers to extend the TV signal from 130 to 128 kilometers (about 1 dB) plus 9 dB yields approximately a 10 dB conversion factor. We thus arrive at 42 dB μ V/M at 2 meters AGL at the periphery of the 128 kilometer mobile range. This is 21 dB stronger than another land mobile station’s allowed signals of 21 dB μ V/m, and is on-air 100% of the time. Thus we conclude that an NTSC LPTV transmitter would cause far more interference to DPLMRS mobiles than would be allowed by other DPLMRS facilities, and we infer that neither NTSC nor 8-VSB LPDTV facilities can be allowed at the currently permitted proximity.

17. To provide protection to DPLMRS facilities equivalent to in-band co-channel facilities, we recommend that for NTSC LPTV facilities the protection contour requirement be reduced by 21 dB to 31 dB μ V/m F(50,10) if the puzzling 9.1 meter receiver height assumption is to be retained at the 130 kilometer radius. Absent a rigorous analysis of digital interference into DPLMRS analog and digital facilities, it is impossible to accurately establish an equivalent protected contour for DLPTV facilities, so we suggest a conservative 10 dB increment, or an F(50,10) contour of 21 dB μ V/m. As mentioned, an analog TV signal has considerably less modulation density in almost any 12.5 kHz bandwidth than the 8-VSB signal, though the difference exceeds 10 dB.

The NPSTC Petition is silent on protection of DPLMRS systems, but seeks to enlarge the base station radius from 80 to 128 kilometers, with which we agree, but which requires better protection criteria. We propose extending the allowed area, but without the presumption that the associated mobiles can thus further extend the T-Band by an additional 48 kilometers to 176 kilometers. The regulatory method to achieve this balance is found in the Norcom waiver, DA 06-1621, in which the FCC conducted its own engineering analysis and concluded that:

“despite the fact that the base station is located beyond the fifty mile limit, the service area for the proposed Norcom base station will remain within the eighty-mile area where land mobile operations are primary. The Commission has stated that it is more inclined to

consider favorably requests for waiver of Section 90.305(a) when the applicant proposes to contain its area of operations within eighty miles of the geographic center of the urban area in question, because such operation would not adversely impact television stations..."

The service area, which is assumed to include the mobile range, is determined by the base station's 39 dB μ V/m contour, limited to the customary 32 kilometers in the T-Band. This makes two needed conclusions for extended DPLMRS T-Band service: that the mobiles normally range within the base station's contour, and that so long as that contour does not extend beyond the 128 kilometer radius, it is primary. We therefore propose to amend the extended area sought by NPSTC to require that the 39 dB μ V/m F(50,50) contour, *not limited by a 32 kilometer radius from the base station site*, be required to remain within a 128 kilometer radius from the T-Band allocation center coordinates. As applicants near the 128 kilometer radius, they therefore must reduce ERP/HAAT or employ directional antennas to contain their service.

18. In many T-Band allocations, overlapping contours are no longer used², having been supplanted by a 1997 memorandum of the LMCC specifying the TSB-88 protocol, a tile-based methodology. Its protection requirements are similar (though it avoids the use of 10% time variability), with typical D/U ratios varying between 17 and 23 dB depending on the protected modulation type. To illustrate the scope of this problem, a chart is plotted of all DPLMRS systems on TV channel 14, with associated base station service contours limited to 32 kilometers. Even with this more limited presumption of mobile range, a small DLPTV facility would cause extensive interference. Figure 7 plots one such hypothetical facility with its 52 dB μ F(50,10) contour nearly tangent to the existing NY/NJ 130 km. protection contour. In our example, a Low Power DTV facility with 500 watts ERP at 50 meters AGL is used—we note that far stronger (and higher) TV transmitting antennas are probable, though of course they would have to be farther away being limited by the extent of their 52 dB μ contour. In this plot, it may be seen that not only is the entire area between the protected 130 kilometer contour and the 80 kilometer circle within which DPLMRS mobile units may be presumed to range blanketed by fields (as predicted at 2 meters AGL 10% of the time), but that this interference extends well into the currently authorized 80 kilometer circle. Moreover, though this facility is deliberately constructed at close proximity to the NY/NJ protected area, its interference also extends unexpectedly well into the non-adjacent Boston channel 14 protected area. This argues for improved allocation policy regardless of the Commission's decision on extension of the T-Band base station radii by right.

19. Next we must consider the upper 3 MHz of co-channel TV signals, which would interfere not with the mobile receivers but would compete with the mobile transmissions as received at the DPLMRS base station. Here the Rules do not offer any protection standards, other than what is provided by defining base station outbound service at 39 dB μ , a far higher level than normally noise limits a mobile receiver. In treaties with Mexico, such received fields are specified at -109 dBm *at the border*, or approximately 19 dB μ at T-Band frequencies: Canada asks even better protection. Averaging all heights for presumptive receive antennas (2098 records, including both Boston and NY/NJ) gives a height above ground of 61 meters³. The area within which the same hypothetical Long Island TV station would cause interference at DPLMRS mobile receive stations is plotted in Figure 8, both at the 52 dB μ V/m value (adjusted for 2 meter AGL) and the accepted 21 dB μ V/M value in use within the T-Band..

20. To arrive at a protection standard for DPLMRS base station receivers located at an average of

² Only in cases where both proposed and incumbent facilities are on the originally "offset" channels are contours used, and then only for §90.35 I/B coordination.

³ Considering only Public Safety eligibles, the average antenna height is 51.7 meters AGL, but in this scenario we are examining the effect of interference on the entire existing DPLMRS population.

61 meter (200 feet) AGL, with a typical median distribution of mobile received signals, we arrive at two cases: protect the existing 80 kilometer radius with a “buffer” area of 48 kilometers within which the mobiles are presumed to range with an additional 2 kilometers provided by the 130 kilometer exclusion zone, or attempt to provide protection for the NPSTC Petition case, with a radius of 128 kilometers and (using present Rules) a buffer of only 2 kilometers. Note that the proximity of undesired DLPTV signals at 52 dB μ V/M at two kilometers would cause devastating interference to a nearby base station at the proposed radius of 128 kilometers. We use the same hypothetical example of a 0.5 kW co-channel (channel 14 in this case) LPDTV station. The noise-limited service contour of this UHF LPDTV facility is defined as 51 dB μ V/m F(50,90), which is surprisingly indistinguishable from the limiting 52 dB μ V/m F(50,10) contour.

21. This station is approximately 150 kilometers from the NYC coordinates, and is thus 70 kilometers from the current 80 kilometer circle within which base stations are permitted by right, and only 32 kilometers from those contemplated in the Petition. A Vertical Path Profile of these two cases shows the free space path loss⁴ to be approximately 123 dB and 116 dB respectively, yielding an undesired field strength (assuming 0.5 kW or +57 dBm) at the protected DPLMRS base station receive antenna of -66 dBm and -50 dBm, both of which would obliterate all desired mobile transmissions. To protect the inbound DPLMRS path to a more reasonable -109 dBm level would require a reduction, in the current case, of 14 dB and in the NPSTC Petition case of 30 dB. Applying the previously suggested separation policy (31 dB μ V/m for NTSC and 21 dB μ V/m for DLPTV), we find that we must remove our hypothetical Long Island LPTV facility to a distance of 180 kilometers, or 100 kilometers from the present base station limit. This provides a path loss improvement of only 3 dB, so it is clear that the inbound path is the limiting case for defining interference to DPLMRS facilities.

22. This situation is so egregious that we cannot recommend a Rule revision using traditional methods with which to protect DPLMRS base station receive antennas from DLPTV transmissions, as this cannot practically be accomplished without terrain shielding. It is tempting to seek some path loss criterion, as both antennas are fixed, but probably the best solution would use both a limiting contour such as a 21 dB μ V/M 2 meter AGL F(50,10)⁵ as well as a requirement that a minimum of 30 dB of path loss due to terrain obstacles be present. Even then, with path losses greater than 160 dB, a 15 kW DLPTV would compete with some DPLMRS mobile transmissions. To this effect, the addition of channels 14 and 15 to Hartford will harmonize the band use in the flattest, most populated and therefore most vulnerable areas. We solicit in Reply Comments a better solution to that which we propose.

23. The case of WNYA-CA, a Class A Low Power protected licensed TV station with both NTSC and DTV records on file, will require a limitation of the requested TV channel 15 assignment to DPLMRS, as the proposed radius, when extended to 128 kilometers, would interfere with and overlap its service area. DPLMRS services in that area would also be impossible. Fortunately, the Berkshire Mountain range, which divides NY from MA, also effectively isolates the two competing requirements for spectrum. For this reason, a limitation on the assignment of DPLMRS systems to CT, MA, RI and Long Island, NY will solve the short-spacing problem.

V. CONCLUSION

24. The risk of interference to both currently allocated and potentially expanded radii of

⁴ Free space is not an unreasonable assumption for a 70 kilometer path between a 50 and 61 meter antenna.

⁵ In our version of the suggested Rule, we chose to incorporate the 9 dB correction factor into the proposed Rule, so it is given as 12 dB μ V/m. Conformal policy would prefer 21 dB μ V/m—if the victims are DPLMRS, use 2 meters AGL, and if TV, 9.1 meters.

DPLMRS stations is considerable, and is understated in the NPSTC Petition. This risk is considerably reduced by amending the allocation policies as herein described, and by assigning TV channels 14 and 15 to Hartford. Almost no new full power DTV service is precluded, and there is pressing need for more UHF spectrum, especially in central Connecticut and Long Island, NY.

Respectfully submitted this 7th of May, 2009 by

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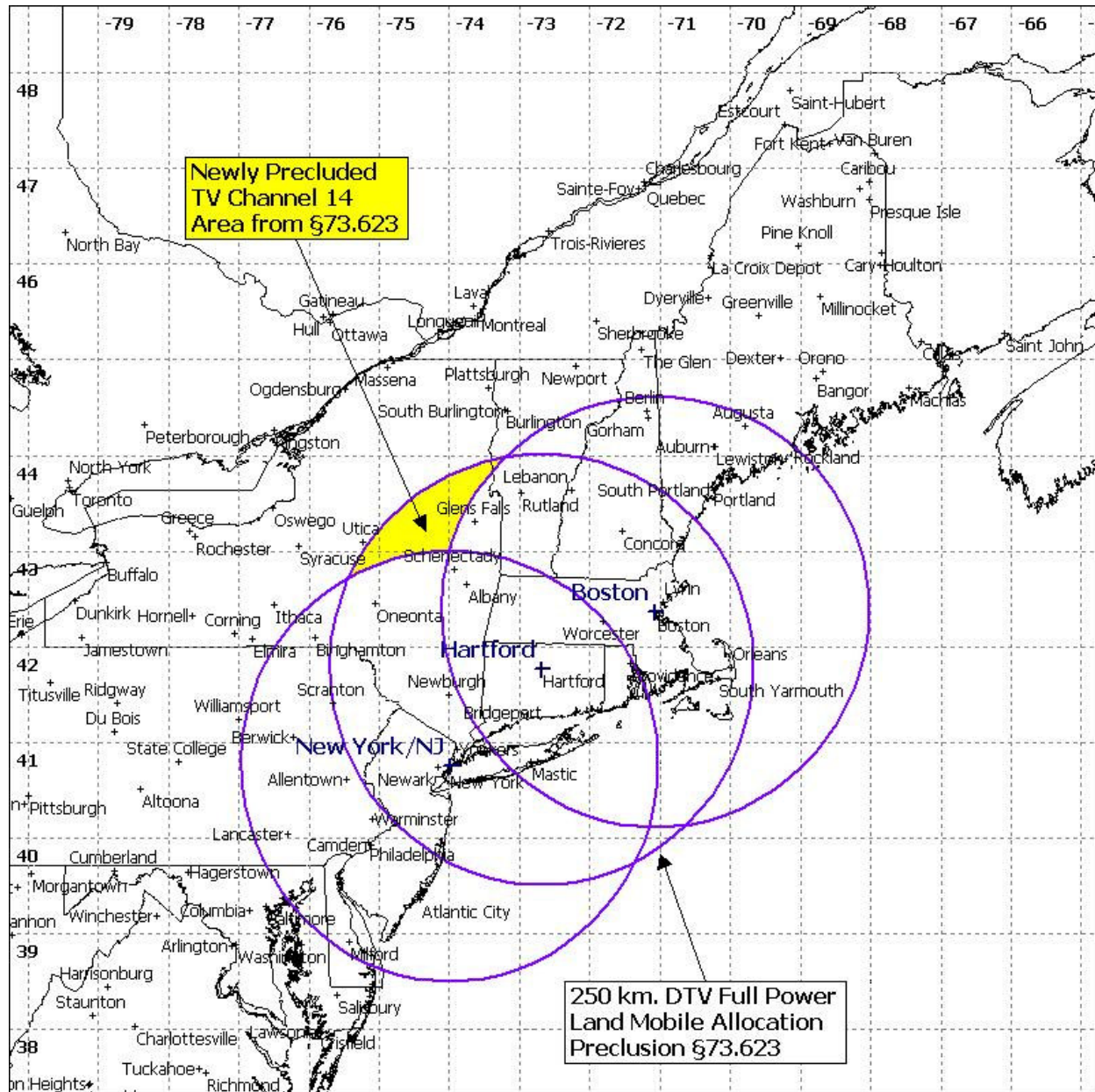


Figure 1

New Area preclusion study for DTV Channel 14 T-Band Assignment of T-Band Channel 14 to Hartford

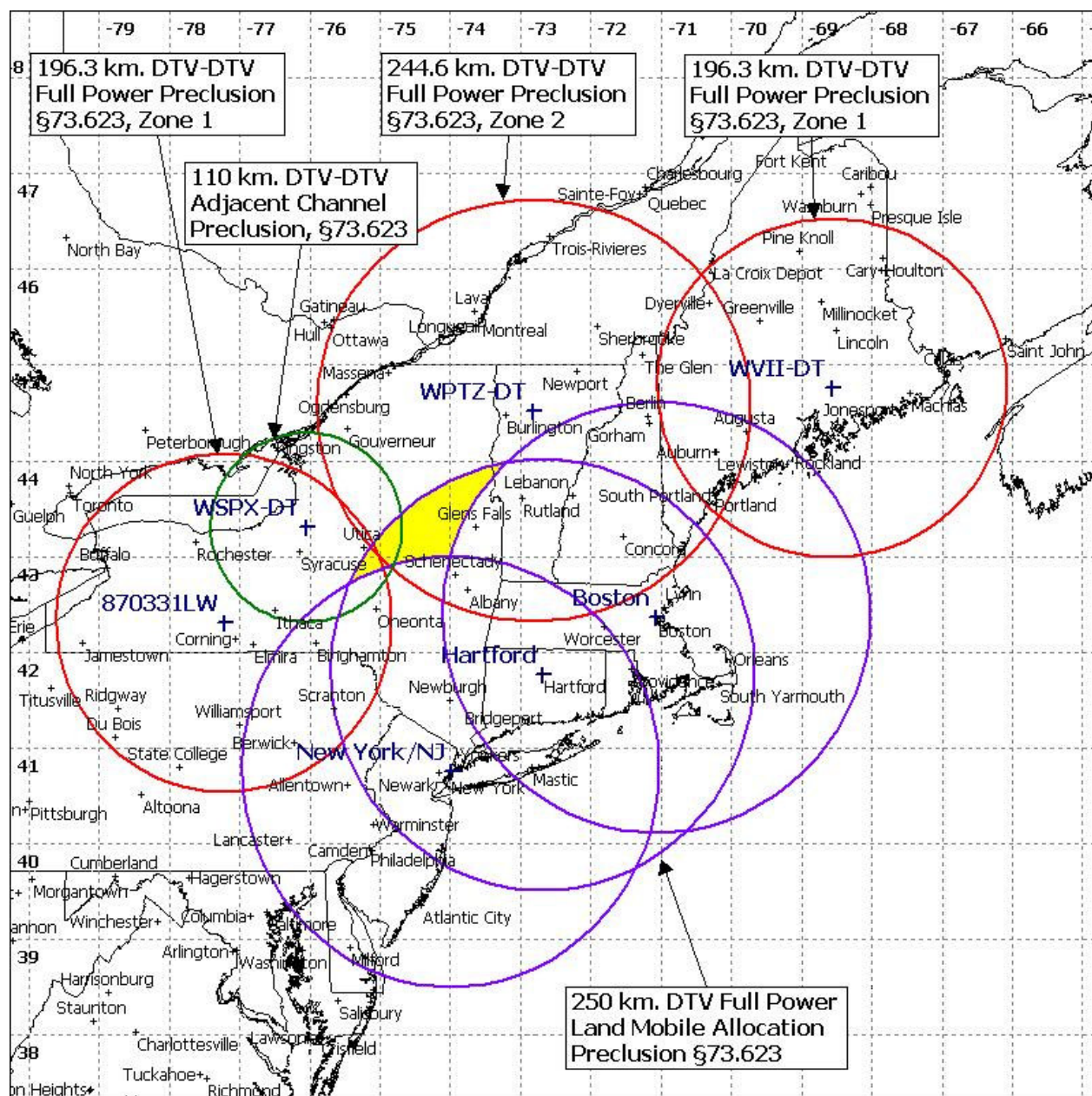


Figure 2: Overlap of Newly Precluded Area by Existing DTV Assignments

As may be seen, the area which would be precluded from assignment to new DTV assignments on TV channel 14 due to a T-Band TV Channel 14 assignment to Hartford is already precluded by WPTZ, DTV-14, North Pole, NY and WSPX, DTV-15, Syracuse, NY.

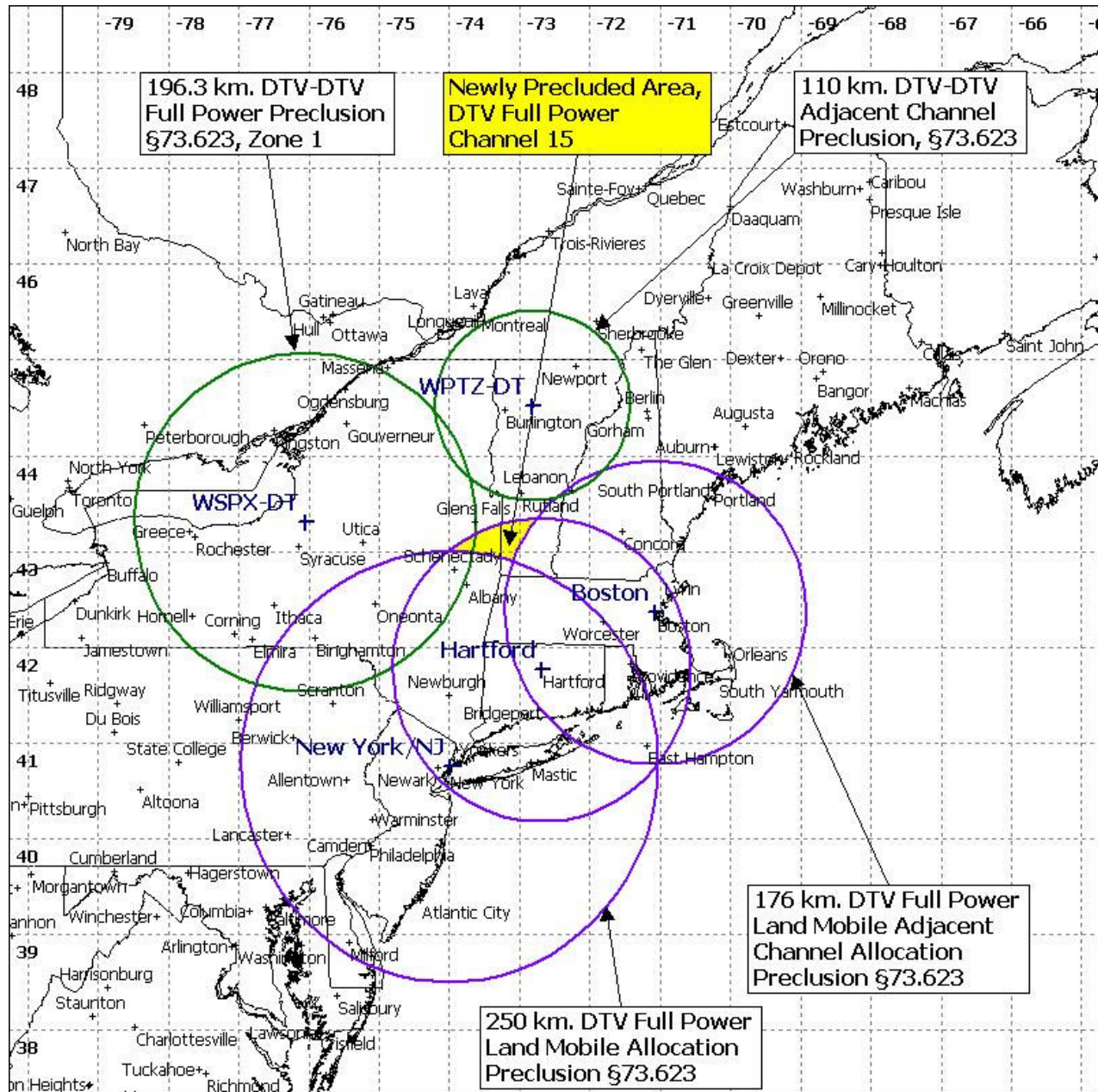


Figure 3: Precluded area for new DTV-15, Full Power

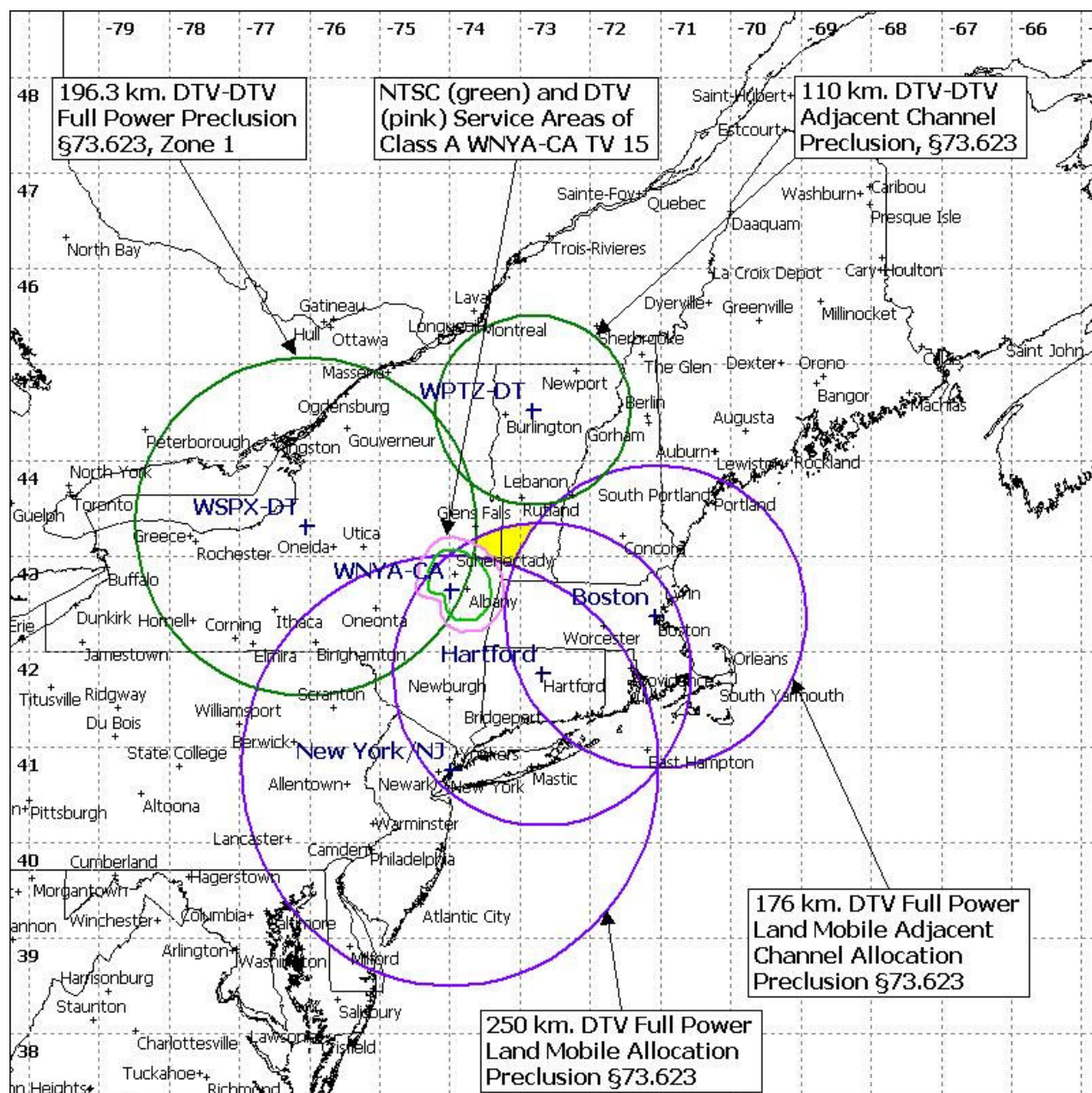


Figure 4

WNYA-TV, Class A on NTSC/DTV channel 15, precludes any Full Power DTV facility on channel 15.

Though it is impossible to test every possible location within the precluded area (in yellow), it is unlikely that a full power DTV facility could be constructed which would not interfere with co-channel WNYA, in either its analog or digital transmission.

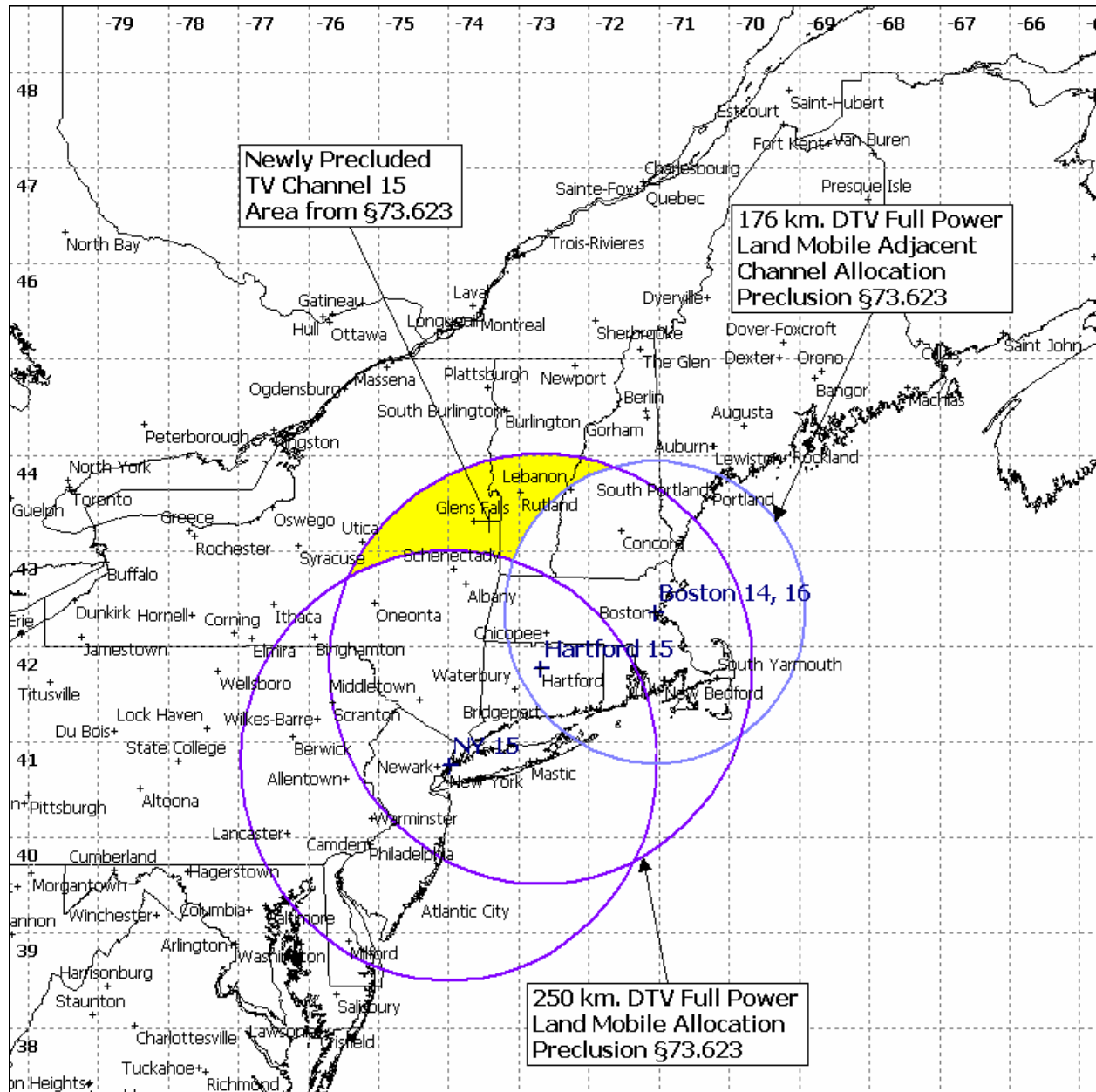


Figure 5

New Area preclusion study for DTV Channel 15 T-Band Assignment of T-Band Channel 15 to Hartford

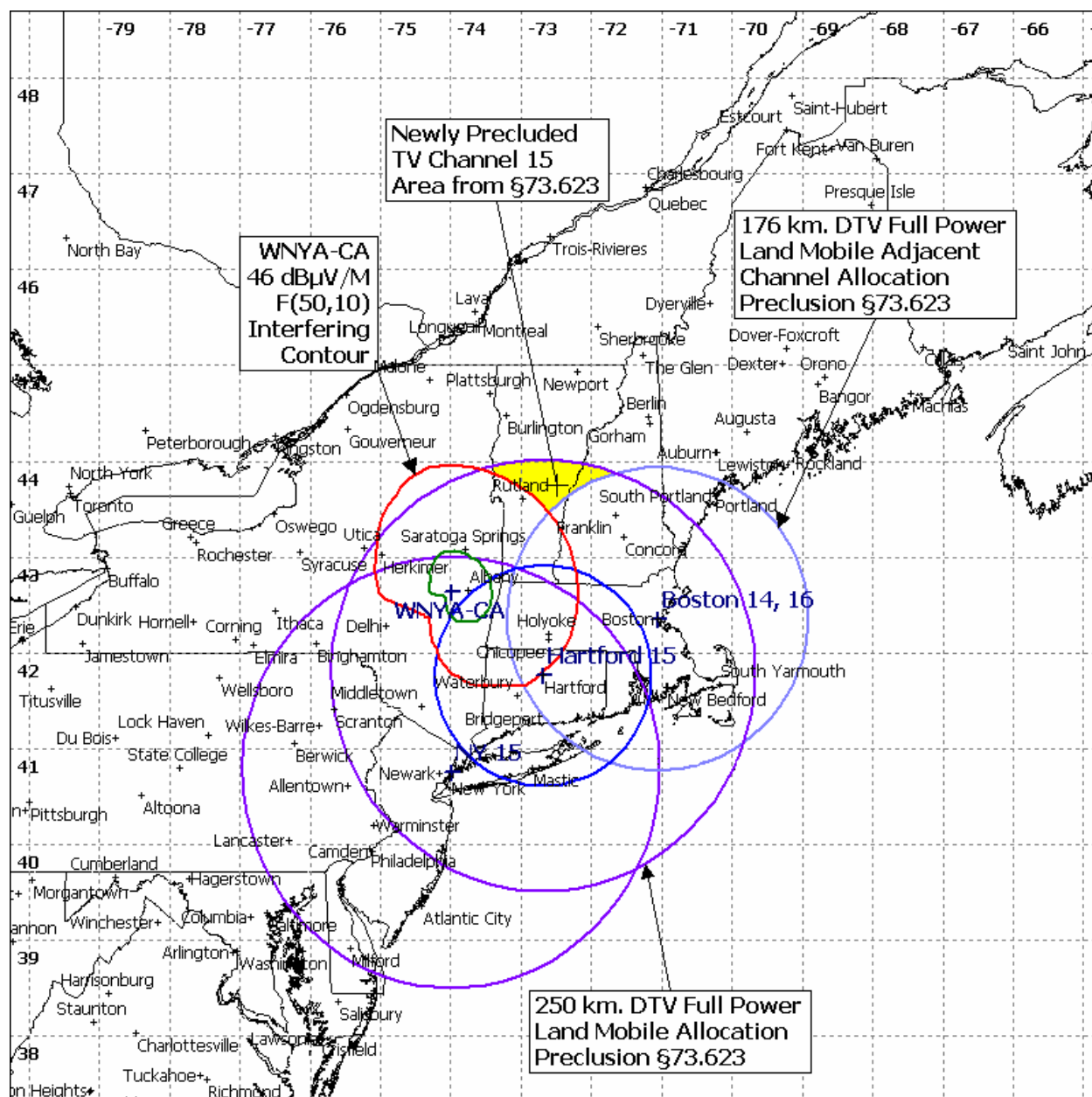
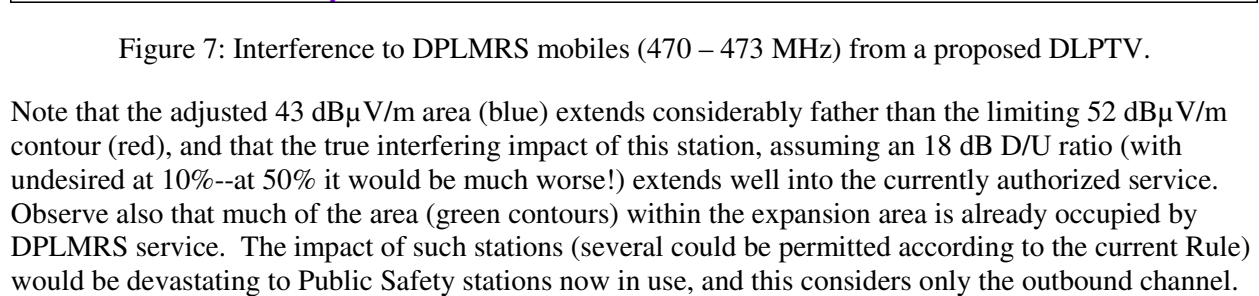


Figure 6

WNYA-CA, Class A on NTSC/DTV channel 15, eliminates most of the newly precluded area.

Though it is impossible to test every possible location within the precluded area in figure 6, it is unlikely that a full power DTV facility could be constructed within the remaining area (in yellow) which would not interfere with co-channel WNYA, in either its analog or digital transmission.



Note that the adjusted 43 dBμV/m area (blue) extends considerably farther than the limiting 52 dBμV/m contour (red), and that the true interfering impact of this station, assuming an 18 dB D/U ratio (with undesired at 10%--at 50% it would be much worse!) extends well into the currently authorized service. Observe also that much of the area (green contours) within the expansion area is already occupied by DPLMRS service. The impact of such stations (several could be permitted according to the current Rule) would be devastating to Public Safety stations now in use, and this considers only the outbound channel.

Appendix A
Proposed Rule Changes

Part 90, Subpart L - Authorization in the Band 470-512 MHz (UHF-TV Sharing)

§90.301 Scope.

Section 90.301 is unchanged.

§90.303 Availability of frequencies.

Section 90.303 is unchanged except that reference to DC/MD/VA is changed to only DC/VA, coordinates are added for Baltimore, MD as a 12th city, and Hartford is added as a 13th city.

Add:

Hartford, CT N 41° 45' 49", W 72° 41' 08" 470-476, 476-482 14, 15

Baltimore, MD N 39°17'11.7", W 76°37'09.7" 488-494, 494-500 17, 18

Modify to remove MD:

Washington, 38°53'51.4" 77°00'31.9" 488-494, 494-500 17, 18

DC/VA

Add a restriction on the use of channel 15 in Hartford:

(d) Base stations and mobiles using channel 15 in Hartford may be located only in Connecticut, Rhode Island, Massachusetts, and Long Island, NY.

§90.305 Location of stations.

Subparagraph (a) is modified to show 128 km (80 miles).

(a) The transmitter site(s) for base station(s), including mobile relay stations, shall be located not more than 128 km. (80 mi.) from the geographic center of the urbanized area listed in §90.303. Base stations more than 80 kilometers (55 miles) from that center must entirely contain their 39 dBμV/m F(50,50) service contour within the 128 kilometer radius.

Subparagraphs (b) and (c) are unchanged.

Subparagraph (d) may be deleted after this Petition is acted on.

§90.307 Protection criteria.

Section 90.307 is completely replaced as follows:

(a) The Grade B service area of primary television stations must be protected as follows:

(1) Full power facilities (64 dBμV/m for NTSC and 41 dBμV/m for DTV) must be prevented from overlap from a new or modified base station's 24 dBμV/m F(50,50) contour as determined in §§73.683-684, i.e., assuming receiver height above ground level of 9.1 meters.

(2) Class A facilities (74 dBμV/m for NTSC and 41 dBμV/m for DTV) must be prevented from overlap from a new or modified base station's 34 dBμV/m F(50,50) contour as determined in §§73.683-684, i.e., assuming receiver height above ground level of 9.1 meters.

(b) Maximum ERP and HAAT. The maximum effective radiated power (ERP) and the antenna height above average terrain (HAAT) of the proposed land mobile base station, the associated control station, and the mobile transmitters shall be determined using the methods described in this section.

(1) Each base station is limited to a maximum ERP of 1000 watts.

(2) Each control station is limited to a maximum ERP of 200 watts and a maximum HAAT of 30.5 m. (100 ft).

(3) Each mobile station is limited to a maximum ERP of 50 watts and a maximum antenna height of 6.1 m. (20 ft.).

(4) Each portable (handheld) transmitter is limited to a maximum ERP of 5 watts.

(5) All transmitters are subject to the power reductions given in Figure A of §90.309 of this chapter, for antenna heights higher than 152 meters (500 ft), unless otherwise substantiated by a contour study.

(c) Methods.

Stations desiring to operating outside the ERP and HAAT limits of paragraph (b), or wishing to operate with contour overlap must either

(1) submit an engineering study justifying the proposed separations based on the parameters of the land mobile station and the parameters, including authorized and/or applied for facilities, of the TV/DTV station(s) it is trying to protect; or

(2) obtain written concurrence from the applicable TV/DTV station(s). If this method is chosen, a copy of the agreement must be submitted with the application.

(d) The minimum distance between a land mobile base station which has associated mobile units and a protected adjacent channel television station is 145 km (90 miles) unless a closer distance is substantiated by a contour study.

§90.309 Tables and figures.

Section 90.309 is deleted.

§90.311 Frequencies.

Section 90.311(a) is unchanged except that New York City is added to channel 16 for public safety use, Hartford, CT is added to channels 14 and 15, and Baltimore, MD, is added to channels 17 and 18, with MD being deleted from the DC/MD/VA entries.

Additionally the following is added to paragraph (a).

(Notwithstanding the frequency limits shown below, Public Safety entities may apply for frequencies in the first 300 kHz of base and mobile portions of each television channel without waiver.)

§90.313 Frequency loading criteria.

Section 90.313(a) and (b) are unchanged. Section 90.313(c) is modified as follows:

(c) A unit is defined as a mobile transmitter-receiver. Loading standards will be applied in terms of the number of units actually in use or to be placed in use within 8 months following authorization. A licensee will be required to show that an assigned frequency pair is at full capacity before it may be assigned a second or additional frequency pair. Channel capacity may be reached either by the requirements of a single licensee or by several users sharing a channel. Until a channel is loaded to capacity it will be available for assignment to other users in the same area. A frequency pair may be reassigned at distances 64 km (40 mi.) or more (32 km. (20 mi)) for Channel 15, Chicago; Channel 20, Philadelphia; and Channel 17, Washington), from the location of base stations authorized on that pair without reference to loading at the point of original installation. Mobile operations in excess of 32 km from their associated base station will be considered secondary, even if the channel is fully loaded. Following authorization, the licensee shall notify the Commission either during or at the close of the 12-month period of the number of units in operation

§90.315 Special provisions governing use of frequencies in the 476-494 MHz band (TV Channels 15, 16 and 17) in the Southern Louisiana-Texas Offshore Zone.

Section 90.315 is unchanged.

§90.317 Fixed ancillary signaling and data transmissions.

Section 90.317 is unchanged.

Section 90.319 is added as follows:

§90.319 Protected Digital Television Stations

The following television stations must be protected by the contour method or by concurrence.

Channel 14:

Boston, MA: WPTZ-DT 44-31-32.0 072-48-58.0 Co-channel (14)

WVII-DT 44-45-35.0 098-34-01.0 Co-channel (14)

None Adjacent Channel

Chicago, IL: WOBC-CA 42-17-17.0 085-09-54.0 Co-channel (14)

WTIU-DT 39-08-30.8 086-29-42.9 Co-channel (14)

WXSP-CA 43-13-03.0 089-29-13.0 Adj Chan (15)

Los Angeles, CA: None Co-channel

None Adjacent Channel

Miami, FL: WRDQ-DT 28-34-07.0 081-03-16.0 Co-channel (14)

WBBH-DT 26-49-21.0 081-45-54.0 Adj. Chan (15)

New York: WSPX (AL) 43-18-18.0 076-03-00.0 Co-channel (14)

Hartford, CT: WSPX (AL) 43-18-18.0 076-03-00.0 Co-channel (14)

WPTZ-DT 44-31-32.0 072-48-58.0 Co-channel (14)

WVII-DT 44-45-35.0 098-34-01.0 Co-channel (14)

WNYA-CA 42-38-12.0 073-59-45.0 Adj. Chan (15)

Pittsburgh, PA: WCMH-DT 39-58-16.0 083-01-40.0 Co-channel (14)

WUTV-DT 43-01-32.0 078-55-43.0 Co-channel (14)

WPSX-DT 41-07-20.0 078-26-29.8 Adj. Chan (15)

WEWS-DT 41-22-26.0 081-43-04.0 Adj. Chan (15)

Channel 15:

Chicago, IL: WXSP-CA 43-13-03.0 089-29-13.0 Co-channel (15)

WSEC-DT 39-39-09.0 090-02-47.0 Co-channel (15)

WOBC-CA 42-17-17.0 085-09-54.0 Adj Chan (14)

WTOV-DT 42-17-14.0 089-10-15.0 Adj Chan (16)

Los Angeles, CA: KSBY-DT 35-21-37.0 120-39-18.0 Co-channel (15)

KTFB-CA 35-26-20.0 118-44-24.0 Adj Chan (16)

New York, NY: WNYA-CA 42-38-12.0 073-59-45.0 Co-channel (15)

WSPX-DT 43-18-18.0 076-03-00.0 Co-channel (15)

WFDC-DT 38-59-24.0 077-04-54.0 Co-channel (15)

No Adjacent Channel

Hartford, CT: WNYA-CA 42-38-12.0 073-59-45.0 Co-channel (15)

No Adjacent Channel

Channel 16:

Boston, MA: None Co-channel

WCBB (DT) 44-09-15.0 070-00-37.0 Adj Chan (17)

WPZQ-DT 41-29-41.0 071-47-06.0 Adj Chan (17)

Dallas/Ft Worth, TX: None Co-channel

None Adjacent Channel

Los Angeles, CA: KTFB-CA 35-26-20.0 118-44-24.0 Co-channel (16)

KSWT-DT 33-03-17.0 114-49-34.0 Co-channel (16)

KSBB (DT) 34-24-37.0 119-42-26.0 Adj. Chan (17)

New York: No Co-channel

WNYA-CA 42-38-12.0 073-59-45.0 Adj. Chan (15)

WPHL-DT 40-02-30.0 075-15-23.0 Adj. Chan (17)

WPXQ-DT 41-29-41.0 071-47-06.0 Adj. Chan (17)

San Francisco, CA: No Co-channel

KBSV-DT 37-35-21.0 120-57-23.0 Adj. Chan (15)

KMUM-CA 38-42-28.0 121-28-32.0 Adj. Chan (15)

Channel 17:

Baltimore, MD: WPHL-DT 40-02-30.0 075-14-23.0 Co-channel (17)

WKTD-CA 36-49-14.0 076-30-41.0 Co-channel (17)

None Adjacent Channel

Houston, TX: None Co-channel

None Adjacent Channel

San Francisco, CA: No Co-channel

KUVS-DT 38-07-07.0 120-43-27.0 Adj. Chan (18)

Washington, DC: WPHL-DT 40-02-30.0 075-14-23.0 Co-channel (17)

WKTD-CA 36-49-14.0 076-30-41.0 Co-channel (17)

WFXR-DT 37-11-47.3 080-09-15.5 Co-channel (17)

WJAL-DT 36-53-25.0 077-58-04.0 Adj. Chan (16)

Channel 18:

Baltimore, MD: WMBC-DT 41-51-53.0 074-12-03.0 Co-channel (18)

WETM-DT 42-06-22.0 076-52-17.0 Co-channel (18)

WPHL-DT 40-02-30.0 075-14-23.0 Adj. Chan (17)

WCAV-DT 37-59-03.0 078-28-52.0 Adj. Chan (19)

Pittsburgh, PA: WETM-DT 42-06-22.0 076-52-17.0 Co-channel (18)

WKYC-TV 41-23-10.0 081-41-21.0 Adj. Chan (17)

Washington, DC: WMBC-DT 41-51-53.0 074-12-03.0 Co-channel (18)

WDBJ-DT 37-11-42.0 080-09-23.0 Co-channel (18)

WPHL-DT 40-02-30.0 075-14-23.0 Adj. Chan (17)

WKTD-CA 36-49-14.0 076-30-41.0 Adj. Chan (17)

WCAV-DT 37-59-03.0 078-28-52.0 Adj. Chan (19)

Channel 19:

Philadelphia, PA: WRDM-CA 41-47-48.0 072-47-52.0 Co-channel (19)

WMBC-DT 40-51-53.0 074-12-03.0 Adj. Chan (18)

Channel 20:

Los Angeles, CA: None Co-channel

KSWB-DT 32-41-47.0 116-56-07.0 Adj. Chan (19)

KCOY-DT 34-54-37.0 120-11-09.0 Adj. Chan (19)

KPMR-DT 34-31-28.0 119-57-35.0 Adj. Chan (21)

Philadelphia, PA: WTXS 41-42-13.0 072-49-57.0 Co-channel (20)

WBOC-DT 38-30-17.0 075-38-37.0 Adj. Chan (21)

WLIW-DT 40-47-19.0 073-27-09.0 Adj. Chan (21)

Changes to Television Rules, Parts 73 and 74

Section 73.623(e) Baltimore and Hartford should be added to the list of cities.

§74.709 Land mobile station protection.

(a) Stations in the Land Mobile Radio Service, using the following channels in the indicated cities will be protected from interference caused by low power TV or TV translator stations, and low power TV and TV translator stations must accept any interference from stations in the land mobile service operating on the following channels:

City	Channels	Coordinates
		Latitude Longitude
Boston, MA	14, 16 42	°21'24" 071 °03'24"
Baltimore, MD	17, 18 39° 17' 11.7",	76° 037' 09.7"
Chicago, IL	14, 15 41° 52' 28"	087° 38' 22"
Cleveland, OH	14, 15 41° 29' 51"	081° 41' 50"
Dallas, TX	16 32° 47' 09"	096° 47' 37"

Detroit, MI	15, 16 42° 19' 48" 083° 02' 57"
Hartford, CT	14, 15 41° 45' 49", 72° 41' 08"
Houston, TX	17 29° 45' 26" 095° 21' 37"
Los Angeles, CA	14, 16, 20 34° 03' 15" 118° 18' 28"
Miami, FL	14 25° 46' 37" 080° 11' 32"
New York, NY	14, 15, 16 40° 45' 06" 073° 59' 39"
Philadelphia, PA	19, 20 39° 56' 58" 075° 09' 21"
Pittsburgh, PA	14, 18 40° 26' 19" 080° 00' 00"
San Francisco, CA	16, 17 37° 46' 39" 122° 24' 40"
Washington, DC	17, 18 38° 53' 51" 077° 00' 33"

(b) and (c) are unchanged.

(d) The low power TV or TV translator station field strength is calculated from the proposed effective radiated power (ERP) and the antenna height above average terrain (HAAT) in pertinent directions.

(1) The field strength is calculated using Figure 10c of Sec. [73.699](#) (F(50, 10) charts) of Part 73 of this chapter.

(2) A low power TV or TV translator station application will not be accepted if it specifies the same channel as one of the land mobile assignments and

(i) its field strength at the land mobile protected contour exceeds 22 dBμV/m if analog, or 12 dBμV/m if digital, and

(ii) its transmitting antenna is line-of-sight to any licensed base station under Part 90 in the same channel within 180 kilometers.

(3) A low power TV or TV translator station application will not be accepted if it specifies a channel that is one channel above or below one of the land mobile assignments and its field strength at the land mobile protected contour exceeds 36 dBμV/m.

(e) is unchanged.